

What is claimed is:

1. A method for on-mold coating a molded article in an open mold, comprising:
 - a) providing a thermosetting unsaturated polyester coating powder composition which consists essentially of an unsaturated polyester resin, a copolymerizable cross-linking prepolymer, and a thermal initiator, with the proviso that the composition is essentially free of a copolymerizable cross-linking monomer;
 - b) applying said coating powder composition, which becomes the outer skin of the molded article, onto a shape-imparting mold surface;
 - c) heating said powder coated mold surface to a temperature sufficient to flow and coalesce the coating powder into a substantially continuous coating film and effect cure, with the temperature being below the mold deformation temperature;
 - e) applying a fill resin, which constitutes the bulk of the molded article, onto said cured powder coating and allowing the cure of the fill resin to advance sufficiently until said powder coating film and fill resin are integral; and,
 - g) releasing said finished coated article from said mold.
2. The method of claim 1, wherein said coating powder composition has the further proviso that either said unsaturated polyester resin possesses an active hydrogen, or said powder composition further consists essentially of a photoinitiator, or both.
3. The method of claim 1, wherein said coating powder composition further consists essentially of a cure catalyst.
4. The method of claim 1, wherein said coating powder composition further consists essentially of a mold release agent.
5. The method of claim 1, wherein prior to step b) the mold surface is preheated to a temperature sufficient to flow and coalesce the coating powder into a substantially continuous film lining the mold surface as the powder strikes the mold surface during step b).

6. The method of claim 1, wherein said mold is a plastic mold.
7. The method of claim 1, wherein said fill resin is an unsaturated polyester fill resin.
8. The method of claim 1, wherein said fill resin is admixed with glass fibers.
9. The method of claim 1, wherein the bulk of the article is formed in step e) by successively applying and curing as needed layers of fill resin and glass fiber matting over said cured powder coating.
10. The method of claim 1, wherein said coating powder composition consists essentially of an unsaturated polyester resin containing active hydrogen atoms, a copolymerizable unsaturated prepolymer, a thermal initiator, a cure accelerator, and a mold release agent.
11. The method of claim 10, wherein said unsaturated polyester resin is formed by reacting an unsaturated dicarboxylic acid or anhydride thereof selected from the group consisting of fumaric acid and maleic anhydride, with an active hydrogen containing diol at least comprising cyclohexane dimethanol, along with minor amounts of aromatic dicarboxylic acid or anhydride thereof at least comprising phthalic anhydride and an aromatic diol at least comprising hydrogenated bisphenol A
12. The method of claim 1, wherein said coating powder composition consists essentially of an unsaturated polyester resin, a copolymerizable unsaturated prepolymer, a thermal initiator, a photoinitiator, a cure catalyst, and a mold release agent.
13. An on-mold powder coating composition, which composition is a film-forming blend in particulate form that consists essentially of:
 - a) an unsaturated polyester resin;
 - b) a cross-linking unsaturated prepolymer;
 - c) a thermal initiator; and,
 - d) a mold release agent,with the provisos that: I) said composition is essentially free of a cross-linking monomer, and II) either said unsaturated polyester resin contains at least one active hydrogen atom, or said blend further consists essentially of a photoinitiator, or both.

14. The composition of claim 13, wherein said blend further consists essentially of:
e) a cure catalyst.

15. The composition of claim 14, wherein said unsaturated polyester resin contains maleate or fumarate unsaturation and an active hydrogen selected from an allylic, benzylic, cyclohexyl, tertiary alkyl, and malonyl hydrogen, said copolymerizable unsaturated prepolymer is an diallyl ester of an aromatic dicarboxylic acid, said initiator is a peroxide, and said catalyst is cobalt salt of a fatty acid.

16. The composition of claim 14, wherein said composition contains a photoinitiator and said unsaturated polyester resin contains maleate or fumarate unsaturation and is free of active hydrogen atoms, said copolymerizable unsaturated prepolymer is a divinyl ether urethane, and said catalyst is a cobalt salt of a fatty acid.

17. An on-mold coated article formed by the method of claim 1.

18. A heat sensitive plastic mold having the coating powder of claim 13 coated and cured thereon without causing significant thermal damage to the mold.

19. A heat sensitive plastic mold having the coating powder of claim 14 coated and cured thereon without causing significant thermal damage to the mold.